



Review: Shunyata Research Venom USB Cable



The Shunyata Research Venom USB cable is the only USB cable offered by this high end manufacturer of cables, AC cords, power distribution centers, and audio accessories. Most other cable manufacturers offer a range of USB cables with enhanced features at increasing prices. Shunyata research has decided to offer only one model with everything that they feel is important in a USB cable design. Given the very reasonable price of \$125 for a .75 meter length, I was curious to see just how the Venom USB cable would compare to the other high priced cables I have reviewed in the past for AudioStream. Knowing Shunyata Research's well recognized product quality and dedication to superior audio performance, I truly wanted to see how this cable would perform in my system.

Whenever I write a USB cable review, the question always comes up of why the need for a special USB cable for audio? After all, isn't the cable just passing 0's and 1's? Why wouldn't a standard USB cable used with our printers work just as well? In actuality, the "digital" signal is composed of high-speed analog square waves that are affected by analog cable design.



I asked Gordon Rankin of Wavelength Audio, a well-known USB audio expert, to describe what he thought were the important factors for an audio USB cable:

Originally I thought USB cables were immune to the problems that SPDIF cables had. Then, with more thought, I realized they weren't. There are basically 4 factors for which cables ... I think (remember here the word "I") make a difference in my testing and observation:

- Data integrity. The cable has to pass data in both directions without fail.
- Noise reduction. The cable has to have the ability to push back the computer noise instead of passing or enhancing it towards the DAC.
- Be able to supply the 5V power and not affect the data pair when doing so.
- Turnaround time... Cable designers in audio have for so long designed uni-directional data cables (i.e. one direction). USB is bidirectional cable and therefore overhang as we call it will cause data errors when going from receive to transmit mode. This can cause pops and clicks in asynchronous DACs because the host computer is not seeing the feedback pipe.

I then asked an engineer friend if he agreed with Gordon's 4 points:

Gordon really captures all of it. The three things that matter for cables are:

- Loss over the entire frequency range, which is pretty high frequency given that ideal USB transmission consists of square waves, even though it's never ideal. This can be measured in dB per foot as a function of frequency.
- Impedance match, again over the frequency. This can be measured in dB as a function of frequency. Whenever a cable is a significant portion of a wavelength long - which is almost always the case with high speed USB 2 transmission - the cable is considered a transmission line in technical terms. The source impedance should be matched to the transmission line impedance, which in turn should be matched to the load impedance. If the match isn't perfect, energy will be reflected back to the source, where it will be reflected back to the load, on and on. The return loss, as expressed in dB, is a measure of how low in amplitude the reflections are. The higher the return loss, the better the match. Some types of instruments just measure

the amplitude and phase of the reflections, while others offer a display that shows just where in the cabling the reflections are coming from and how severe each one is.

- The crosstalk and radiation levels. This can be measured in dB, again as a function of frequency - generally described as transfer impedance.

(see www.interferencetechnology.com/differential-transfer-impedance-of-shielded-twisted-pairs)

All these describe in technical terms what Gordon is accurately saying and what you are hearing in your system, or at least how imperfections manifest themselves as part of an audio system.

I mention all of this to show that this isn't all "audio voodoo" or "snake oil" - professionals at a high level outside the audio business worry about this stuff. I think Gordon takes a good deal of criticism for considering all of this, "because it's only audio" to so many "experts". Yet, it's bona fide engineering, which these same "experts" often say is lacking in the audio biz.

The Design of the Venom USB Cable

I was very impressed with the overall look and feel of quality of this USB cable. Shunyata Research has not skimmed on the design or materials used in this cable. The Venom USB cable uses Shunyata's most expensive VTX (Virtual Tube Geometry) pure copper conductors. The Venom USB cable's signal conductors are completely separated from the power conductors reducing cross-talk and noise in the cable.

The Venom USB cable features include:

- USB Audio 2.0
- A-Male to B-Male Connectors
- Massive 20AWG Gauge Conductors
- Silver Plated Copper Conductors
- Triple Shielded for EMI/RFI Immunity
- Gold Plated Connectors

Components Used in Evaluating the Venom USB Cable

An early 2011 MacBook Pro 2.3 GHz, 16 GB RAM with Samsung SSD was used with 2 GRAID Thunderbolt drives for the music libraries; one for PCM and the other for DSD files. OSX Yosemite and Boot Camp Windows 8.1 64 Pro were the operating systems. Pure Music 2.04 was listened to with OSX Yosemite. Foobar2000 with Fidelia Pro 6.6 were used in the Windows evaluations. I also listened to JPLAY's new version 6 using its new Streamer and Foobar2000.

The GRAID Thunderbolt drives were powered by HDPLEX linear power supplies. An iFi Audio micro iUSBPower was also driven with an HDPLEX linear power supply. The Venom USB cable was listened to with the USB cable directly plugged into the MacBook Pro and also connected to the iFi Audio micro iUSBPower.

One component that continues to make a big difference in the performance of my system is the Shunyata Research Hydra DPC-6 power center. The MacBook Pro and the hard drives were plugged into the DPC-6. The iFi Audio micro iUSBPower was also plugged into the Hydra DPC-6.

The computer and the DAC were each placed on Synergistic Research Tranquility Bases powered by the Transporter Ultra SE. Synergistic Research Thunderbolt Active SE cables were used for the hard drives. Other USB cables used in this review were the Synergistic Research Galileo LE, JCAT Reference USB cable, and the Audioquest Diamond USB cable.

USB DACs used in this evaluation were the MSB Technology Analog DAC with Analog Power Base and the Wavelength Audio Crimson / Quotient Q1 with Silver transformers. These DACs were plugged into a Shunyata Research Triton Power Center.

Initial Sound Impressions of the Venom USB Cable

I did most of my listening with the Venom USB connected directly to my computer; the manner in which I feel most users will utilize this cable. As I listened to music, I was immediately impressed by how open and neutral sounding the Venom USB sounded. Many of the lower priced USB cables I have auditioned are dark sounding and somewhat veiled; not the Venom USB. This cable projects a

wide and deep soundstage with the ability to reproduce a layered soundstage. The bass is a little prominent, but with good definition. Highs have very nice transient detail and extension. The all-important midrange is relaxed sounding and resolving of low level information. Obviously, these findings were heard with the Wavelength Crimson DAC and the MSB Technology Analog DAC; two very high quality products. I have found that some DACs, especially those that have a bit more personality than the two I used for this evaluation, might slightly alter the results. But I feel that most users will hear what I am experiencing even with lower priced DACs.

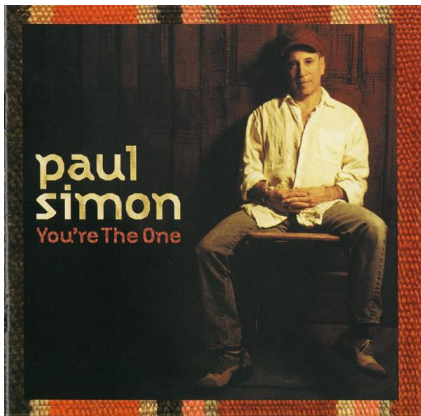
I should also mention that I encountered no issues with the Venom USB playing 16/44.1 files to 24/352.8 files. DSD 64 and 128 also played flawlessly with no dropouts or noises.

Using the Venom USB with the iFi Audio micro iUSBPower driven with an HDPLEX linear power supply resulted in a larger soundstage, a deeper more quiet background, and a more relaxed natural midrange.



Some of the Music I Listened to With the Venom USB

Ian Anderson's new release Homo Erraticus 24/48 sounded terrific with the Venom USB cable. If you liked Jethro Tull's Thick As A Brick released in 1972 that was based on a poem by Gerald Bostock, you will probably enjoy this recording as the lyrics were also written by Bostock (really Ian Anderson). Ian Anderson's voice was well focused as was his flute. The resolution of transient detail was quite excellent listening to this recording with the Venom USB.



Paul Simon's You're the One 24/96 has a prominent tuneful bass line that was reproduced with good definition and slam using the Venom USB. I heard no image smearing of Simon's voice with the prominent bass line in this hi-res recording.



Listening to Elizabeth Joy Row with the London Symphony Orchestra performing Piano Concertos by Britten and Barber 24/96 was a real treat with the Venom USB. The recording venue's ambience was easily heard with a wide and deep soundstage. The piano had great body and solidity with a tube-like bloom and dimensionality. The rich tonal colors of the orchestra were well reproduced in this recording.



Sareena Overwater's Blue Coast Special Event 28 DSD64 presented a deep jet black background with wonderful resolution of voices and guitar. I particularly enjoyed the cut with Keith Greeninger singing Ruby Tuesday with Sareena. The Venom USB reproduced this recording with a harmonic richness to the voices that sounded very natural and real.

An Interesting Finding

The latest version of JPlay 6 includes a new feature—a Streamer based on the OpenHome Media standard for home audio devices that can be used with OpenHome/UPnP/DLNA control points on multiple platforms. Several of my expensive USB cables had issues with the Streamer/JPlay. At high sample rates of 192 kHz, I was getting intermittent pops and clicks. Perhaps this was the result of the cable experiencing overhang in its bidirectional behavior. Using the Venom USB cable eliminated this issue. The Venom USB was rock solid with absolutely no drop-outs.

USB Cable Comparisons

The Audioquest Diamond USB Cable

The Audioquest Diamond USB cable is a particular favorite of mine due to its excellent audio qualities and solid support of USB Audio Class 2. The Diamond's cost is \$549 for a .75 meter length that uses 100% pure Perfect Surface Silver solid-core conductors. Other features include Audioquest's 72-Volt DBS System and precision direct-silver plated pin terminations. The Diamond is highly detailed but with a wonderful relaxed quality that makes it very easy to listen to for extended periods of time. Compared to the Venom USB, the Audioquest has the larger soundstage with more detail at the high end. The bass is also slightly tighter and better defined than the Venom USB.

The JCAT Reference USB Cable

This dual lead USB cable, priced at \$523 for 1 meter, separates the data lines from the 5 volt power lines. Again, I heard a slightly larger soundstage with the JCAT with faster transients at the high end. The bass had better definition with more impact than the Venom USB.

The differences I heard with both the Diamond and JCAT Reference compared to the Venom USB were noticeable, but not huge. I suspect that a significant percentage of you reading this review would be perfectly happy with the Shunyata. It appears that one has to spend significantly more money to better the performance of the Venom USB.

I also compared the Venom USB with a standard Belkin Pro Series USB 2.0 cable; 6 feet for \$8.25. The Belkin sounded dark and closed down. The bass and high end were significantly rolled-off sounding. The Belkin might be a wonderful cable for your printer, but not for a high end audio DAC.



The Venom USB Cable Is An Excellent Value

I found the Shunyata Research Venom USB cable to be a first-class performer that is also an excellent value given its very reasonable price. The cable was extremely revealing and never left me wanting for my other significantly more expensive USB cables. While I did hear improvements in performance with the Audioquest Diamond and the JCAT Reference, the difference in price to obtain this level of sound quality was significant; a level that might not be appreciated by all listeners. In closing, the Shunyata Research Venom USB cable is a topnotch USB cable that offers performance that rivals some of the most respected high-priced offerings, but at a price that will not be intimidating to the computer audiophile.